

Unit 6

Review class

$$2) \quad X - \left(\frac{y}{\frac{x}{y} + \frac{y}{x}} \right) \frac{xy}{xy} = X - \frac{xy^2}{x^2 + y^2}$$

$$\frac{X \cdot (x^2 + y^2)}{1 \cdot (x^2 + y^2)} - \frac{xy^2}{x^2 + y^2} = \frac{x^3 + xy^2}{x^2 + y^2} + \frac{-xy^2}{x^2 + y^2}$$

$$\frac{x^3}{x^2 + y^2}$$

Simplify

$$\frac{9x^2 + 6x + 1}{8x^3 - y^3} \cdot \frac{4x^2 - y^2}{3x^2 + 3xy + x + y} \div \frac{3x^2 - 8x - 3}{4x^2 - 10x - 6} =$$

$20x^2 - 5x - 3$

$$\frac{\cancel{(3x+1)}^1}{\cancel{(2x+y)}(4x^2+2xy+y^2)} \cdot \frac{\cancel{(2x-y)}(2x+y)}{(x+y)\cancel{(3x+1)}} \cdot \frac{2\cancel{(x-3)}(2x+1)}{\cancel{(3x+1)}\cancel{(x-3)}} =$$

$$\frac{2(2x+y)(2x+1)}{(4x^2+2xy+y^2)(x+y)}$$

$$\left(\frac{2}{x-2} + \frac{3}{x-2} \right) \div \frac{3}{x^3 + x^2 - 4x - 4}$$

$$\frac{5}{\cancel{x-2}} \times \frac{\cancel{(x-2)}(x+2)(x+1)}{3} =$$

$$\frac{5(x+2)(x+1)}{3}$$

Find the restrictions on the denominator.

1) $\{x \mid x \neq 2/3, x \neq -1/3\}$

$$\frac{7x-3}{9x^2-3x-2}$$

$$9x^2-3x-2 \neq 0$$

$$(3x-2)(3x+1) \neq 0$$

$$3x-2 \neq 0 \quad | \quad 3x+1 \neq 0$$

$$3x \neq 2 \quad | \quad 3x \neq -1$$

$$x \neq 2/3 \quad | \quad x \neq -1/3$$

2)

$$\frac{x^3+3}{x^3-x}$$

$$x^3-x \neq 0$$

$$x(x^2-1) \neq 0$$

$$x(x+1)(x-1) \neq 0$$

$$x \neq 0 \quad | \quad x+1 \neq 0 \quad | \quad x-1 \neq 0$$

$$x \neq -1 \quad | \quad x \neq 1$$